Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
Permit: F-20-004
Sister Schubert's Homemade Rolls, Inc.
900 Top Quality Drive
Horse Cave, KY 42749
February 21, 2020
Ossama Ateyeh, Reviewer
SOURCE ID: 21-099-00036
AGENCY INTEREST: 82597
ACTIVITY: APE20200001

TABLE OF CONTENTS

SECTION 1 – SOURCE DESCRIPTION

SIC Code: 2051, Bread and Other Baker Products, Except Cookies and Crackers

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Hart
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☒ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No

PTE* greater than 25 tpy for combined HAP ☐ Yes ☒ No

*PTE does not include self-imposed emission limitations.

Description of Facility:

Sister Schubert's Homemade Rolls, Inc. is a bakery in Horse Cave, KY focusing on the bread baking process. The facility is permitted to operate four bread baking lines (Lines 1, 2, 3, and 4). The bread baking process is basically the same for all four lines. The process consists of mixing the raw ingredients of flour, water, sugar, shortening and/or butter, salt, yeast, and eggs, followed by proofing, baking, packaging, and shipping. Flour will be delivered to the bakery via truck and pneumatically unloaded into flour storage silos. Dust emissions will be minimized by a closed loop system with control provided via dust collectors. Other raw ingredients are stored in packaging in a room adjacent to the ingredient mixing area. Raw ingredients are combined in the ingredient mixing area. The dough is transferred to the sheeting where the dough is formed into individual rolls and, depending upon the product, placed on baking sheets or into baking pans. The dough is then conveyed to the proofers where the moisture and temperature levels are maintained allowing the yeast to react and the dough to rise. After exiting the proofers, the dough enters the conveyer ovens. The baked bread is then given adequate time to cool. After cooling, the bread is collected for packaging. The packaged bread is labeled, boxed and sent for shipment.

Several natural gas-fired heat exchangers provide process heat to facilitate the ingredient preparation, mixing, proofing, and baking. Other natural gas-fired indirect heat exchangers provide space heat to the various preparation and office areas.

The sources of emissions of regulated air pollutants at the bakery are the flour handling and storage system, the gas-fired burners, the bakery oven emissions, and the emergency generators.

SECTION 2 – CURRENT APPLICATION

Permit Number: F-20-004 Activities: APE20200001

Received: 1/24/2020 Application Complete Date(s): 2/13/2020

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☐Yes ☒No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action: Sister Schubert's Homemade Rolls, Inc. is currently operating under Conditional Major Source Permit F-15-026 R2. The Company is submitting renewal permit application. The facility is requesting change in the emission unit number for insignificant activities associated with Line 4.

F-20-004 Emission Summary		
Pollutant	2018 Actual (tpy)	Revised PTE F-20-004 (tpy)
CO	1.53	19.02
NO_X	17.90	27.42
PT	0.931	17.70
PM_{10}	0.462	7.62
$PM_{2.5}$	0.109	3.50
SO_2	0.024	0.55
VOC	20.390	101.39
Lead	8.8E-06	7.92E-05
Greenhouse Gases (GHGs)		
Carbon Dioxide	2128.15	24898
Methane	0.040	0.48
Nitrous Oxide	0.0389	0.45
CO_2 Equivalent (CO_2e)	2141	25045
Hazardous Air Pollutants (HAPs)		
Chromium Total	0.004	0.278
Methanol	0.071	2.61
Toluene	0.000	1.76
Dichloromethane	0	1.76
Combined HAPs:	0.0764	6.425

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

X7 Natural Gas-Fired Indirect Heat Exchangers (19, 23, 34-35, 36, 53-54)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.56 lb/MMBtu: 19, 23	401 KAR 59:015, Section 4(1)(a)	PT: 7.6 lb/MMscf PM_{10}: 5.7 lb/MMscf $PM_{2.5}$: 1.9 lb/MMscf (AP 42 Table 1.4-2)	Assumed while combusting natural gas
	0.55 lb/MMBtu: 34, 35, 36	401 KAR 59:015, Section 4(1)(c)		
	0.50 lbs/MMBtu: 53-54			
	20% Opacity	401 KAR 59:015, Section 4(2)		
SO_2	3.0 lb/MMBtu: 19, 23	401 KAR 59:015, Section 5(1)(a)(1)	0.6 lb/MMscf (AP 42 Table 1.4-2)	
	2.86 lb/MMBtu: 34, 35, 36	401 KAR 59:015, Section 5(1)(c)(1)		
	2.50 lbs/MMBtu: 53-54			

Initial Construction and Modification Date:
2007 – 19, 23
2010 – 34, 35, 36
2019 – 53-54

Process Description:
These natural gas indirect heat exchangers provide heat to the chamber ovens for the baking step, but have separate emission points. Unit 36 provides heat for the line 3 proofing process and is its point of emission.

Applicable Regulation:

401 KAR 59:015, New Indirect Heat Exchangers is applicable to an indirect heat exchanger having a heat input capacity greater than 1 MMBtu/hr commenced on or after April 9, 1972.

Comments:
None

Lines 1, 2, 3, and 4 Bread Baking Chamber Ovens (16-18, 20-22, 30-33, 49-52)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	E=2.34 lb/hr, P≤0.50 $E=3.59P^{0.62}$, 0.50<P≤30 $E=17.31P^{0.16}$, P>30 E (lb/hr) = emission rate P (ton/hr) = process rate	401 KAR 59:010, Section 3(2)	N/A	Bread baking process associated with low particulate matter emissions
	20% Opacity	401 KAR 59:010, Section 3(1)(a)		Refer to Comments section.

Initial Construction Date:
2007 – 16-18, 20-22
2010 – 30-33
2019 – 49-52

Process Description:
Various ovens for the purpose of baking.

Applicable Regulation:

401 KAR 59:010 New Process Operations is applicable to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in this chapter, commenced on or after July 2, 1975.

Comments:
KY EIS Data is only tracking VOC. No emission limits on VOC.

Lines 1, 2, 3, and 4 Ink Jet Stencil (41, 65)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	E=2.34 lb/hr, P≤0.50 $E=3.59P^{0.62}$, 0.50<P≤30 $E=17.31P^{0.16}$, P>30 E (lb/hr) = emission rate P (ton/hr) = process rate	401 KAR 59:010, Section 3(2)	41.a & 65.a*: PT: 1.43 lb/gal PM_{10}: 1.43 lb/gal $PM_{2.5}$: 0.6435 lb/gal	Assumed in compliance based on MSDS sheets.
	20% Opacity	401 KAR 59:010, Section 3(1)(a)	41.d & 65.d*: PT: 0.66 lb/gal PM_{10}: 0.66 lb/gal $PM_{2.5}$: 0.297 lb/gal	

Initial Construction Date:
41: 1/1/2007
65: 4/1/2019

Process Description:
Used to place date stamps on product containers. Facilitates all three production lines.

Applicable Regulation:
401 KAR 59:010 New Process Operations is applicable to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in this chapter, commenced on or after July 2, 1975.

Comments:

Process ID	Description:	Material:	Process Rate (gal/hr):
a	Video Jet Ink Usage	Video Jet Ink	0.08452
b	Video Jet Make-up Fluid Usage	Make-up Fluid	0.08452
c	Video Jet Clean-up Solvent	Clean-up Solvent	0.00122
d	Marsh Ink Usage	Marsh Ink	0.05284

*EFs from KY EIS Data.

There are no HAPs or toxic substances for which a concenctration exists above the EPA's RSL. This determination is based on the screening risk assessment performed on Tuesday, October 22, 2019 for methanol. The maximum concentration of methanol for each system is an annual average of 0.8424 $\mu g/m^3$, which is much less than the noncarcinogenic SL of 21,000 $\mu g/m^3$. The MSDS for the VideoJet ink specifies Chromium III (APE20100001 'Addendum Information'), which has no RSL threshold.

Various Heat Exchangers and Water Heaters				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**

Initial Construction Date:
Refer to Tables.

Process Description:
Various space heaters, indirect heat exchangers, and water heaters.

Applicable Regulation:
N/A

Comments:
X21 Natural Gas-Fired Direct Heat Exchangers

Emission Unit:	Description:	Construction Commenced:	Fuel Input (MMBtu/hr):
04	Mix/Sheet/Butter Area Heater	2007	1.440
05	QA/Production Line Area Heater	2007	0.040
07	Maintenance Shop Area Heater	2007	0.275
09	Line 2 Proofer/Oven Area Heater	2007	3.189
10	Line 1 Oven Area Heater	2007	3.189
26	Mechanical Room Area Heater	2007	0.400
27	Receiving Dock Area Heater	2007	0.400
37	Line 3 QA/Office Area Heater	2010	0.040
38	Line 3 Packaging Area Heater	2010	0.325
39	Line 3 Proofer/Oven Area Heater	2010	5.400
40	Line 3 Packaging Area Heater	2010	0.150
42	Line 3 Sheeting Area Heater	2011	0.913
47	Chick – fill-A Area Heater	2019	0.150
57	Line 4 Mixing Area Heater	2019	1.588
58-61	Line 4 Ceiling Area Heaters	2019	0.180 each
66	Line 4 Lab/Office Area Heater	2019	0.040
67	Line 4 Shipping/Office Area Heater	2019	0.040
68	Line 4 Electrical Room Area Heater	2019	0.180
69-72	Line 5 Ceiling Area Heaters	2019	0.180 each
73	Line 4 Training Area Heater	2019	0.067
74	Line 4 Ammonia Area Heater	2019	0.150
75	Line 4 Oven Area Heater	2019	5.494

Various Heat Exchangers and Water Heaters			
76	Line 4 Packaging Area Heater	2019	0.238
77	Line 4 Silo Area Heater	2019	0.30

X6 Natural Gas-Fired Indirect Heat Exchangers

Emission Unit:	Description:	Construction Commenced:	Fuel Input (MMBtu/hr):
12-13	Proofer Line 1 Process Heat	2007	0.2, 0.2
14-15	Proofer Line 2 Process Heat	2007	0.3, 0.3
55-56	Line 4 Proofer Process Heater	2019	0.30, 0.30

X6 Natural Gas-Fired Hot Water Heaters

Emission Unit:	Description:	Construction Commenced:	Fuel Input (MMBtu/hr):
24,25	Water Heaters #1 and #2	2011	0.99, 0.99
43,44	Water Heaters #3 and #4	2011	0.985, 0.985
62,63	Water Heaters #5 and #6	2019	0.99, 0.99

X3 Diesel-Fired Emergency Generators (45, 46, 64)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
NO_X	4.0 g/kW-hr	40 CFR 60.4205(b)	45: 604.17 lb/Mgal	Refer to Comments section.
			46: 604.17 lb/Mgal	
			64: 603 lbs/Mgal (AP 42 Table 3.3-1)	
CO	3.5 g/kW-hr	40 CFR 60.4205(b)	45: 130.15 lb/Mgal	
			46: 130.15 lb/Mgal	
			64: 130 lbs/Mgal (AP 42 Table 3.3-1)	
PM	0.2 g/kW-hr	40 CFR 60.4205(b)	45: PT: 42.47 lb/Mgal PM_{10}: 42.47 lb/Mgal $PM_{2.5}$: 42.47 lb/Mgal	
			46: PT: 42.47 lb/Mgal PM_{10}: 42.47 lb/Mgal $PM_{2.5}$: 42.47 lb/Mgal	
			64: PT: 42.5 lb/Mgal PM_{10}: 42.5 lb/Mgal $PM_{2.5}$: 42.5 lb/Mgal (AP 42 Table 3.3-1)	

Initial Construction and/or Modification Date:
3/1/2007 – 45
1/1/2011 – 46
2019 - 64

Process Description:
These engines are for power generation in case of an emergency. They may also be used for the purpose of maintenance checks and readiness testing, provided the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with them.

Applicable Regulation:
401 KAR 60:005 Section 2(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines is applicable to stationary CI ICE that commence construction after July 11, 2005.

X3 Diesel-Fired Emergency Generators (45, 46, 64)

401 KAR 63:002 Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines is applicable to stationary RICE at a major or area source of HAP emissions.

Comments:

Emission Unit:	Model:	Fuel Input (Mgal/hr):	Power Output (hr):
45	Cummins DSHAF	0.0097	364
46	Cummins DSHAC	0.0164	364
64	Cummins DSHAC	0.0164	364

By purchasing, installing, and configuring an engine certified to emission standards in 40 CFR 60.4205(b) as applicable, and operating and maintaining according to manufacturer's written instructions. Also must meet requirements of 40 CFR parts 89, 94, and/or 1068 as they apply [40 CFR 60.4211(a) and (c)].

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Throughput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
16-18		VOC	Preclude 401 KAR 52:020	Initial	Method 25A	90 tpy	3.61 lb/hr	2.64 ton/hr bread	CMN20110001	8/10/2011

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
90 tpy of VOC emissions based on a consecutive twelve month rolling total.	To preclude the applicability of 401 KAR 52:020, *Title V Permits*	Source-wide

Table B - Summary of Applicable Regulations:

Regulation	Emission Unit
401 KAR 59:010 *New Process Operations*	16-18, 20-22, 30-33, 41, 49-52
401 KAR 59:015 *New Indirect Heat Exchangers*	19, 23, 34-35, 36, 53, 54
401 KAR 60:005 Section 2(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII) *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*	45, 46, 64
401 KAR 63:002 Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ) *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*	45, 46, 64

Table C - Summary of Precluded Regulations:

N/A

Table D - Summary of Non Applicable Regulations:

N/A

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*

The Division for Air Quality (Division) has performed SCREEN View on October 22, 2019 of potentially hazardous matter or toxic substances (Methanol) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
S-07-019	Initial	APE20060001	1/24/07	2/14/07	Minor Source Initial Construction	N/A
F-10-033	Initial	APE20100001	7/23/10	10/12/10	Conditional Major Initial	N/A
F-10-033 R1	Minor Revision	APE20110001	7/23/10	4/11/11	Corrected capacities of units 37, 38, 39, 40, added two emergency generators, added heaters units 41, 42, 43	N/A
F-15-026	Renewal	APE20150001	7/2/2015	10/16/2015	Renewal	N/A
F-15-026 R1	Admin Amend	APE20180001	6/1/2018	8/24/2018	Administrative Amendment; Added an Insignificant Activity	N/A
F-15-026 R2	Minor Revision	APE20180003	9/23/2018	11/3/2019	Added 4th Line	N/A

SECTION 6 – PERMIT APPLICATION HISTORY

N/A

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS – Ambient Air Quality Standards
BACT – Best Available Control Technology
Btu – British thermal unit
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
EPA – Environmental Protection Agency
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NO_x – Nitrogen Oxides
NSR – New Source Review
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PTE – Potential to Emit
RSL – Regional Screening Level
SL – Screening Level
SO_2 – Sulfur Dioxide
VOC – Volatile Organic Compounds

APPENDIX B – INDIRECT HEAT EXCHANGER EMISSIONS LIMITATIONS

Summary of All Affected Facilities Used to Determine 401 KAR 59:015 Emission Limits								
EU	Fuel(s)	Capacity (MMBtu/ hr)	Constructed	Basis for PM Limit	Total Heat Input Capacity for PM Limit (MMBtu/hr)	Basis for SO_2 Limit	Total Heat Input Capacity for SO_2 Limit (MMBtu/hr)	Notes
19	Natural Gas	2.5	2007	401 KAR 59:015 Section 4(1)(a) and 4(1)(c)	5.0	401 KAR 59:015, Section 5(1)(a)(1) and 5(1)(c)(1)	5.0	
23		2.5	2007		5.0		5.0	
34-35		5.0	2010		11.2		11.2	
36		1.2	2010		11.2		11.2	
53-54		4.4	2019		15.6		15.6	